

*Hosp Ships*

HOSPITAL SHIPS - AHL2-17

Pre-Commissioning Data

BulMed November 1944

1. To assist the prospective medical officer in fitting out these hospital ships, the information below is presented. It is the Bureau's desire to fit these ships out from the medical standpoint as completely and as expeditiously as circumstances will permit. To this end, a considerable amount of planning detail has been accomplished, and an attempt has been made to reduce pre-commissioning work on the part of the medical officer and his staff to a minimum.
2. Reference is made to prospective commissioning dates for these ships, which are urgently required to suit operating schedules set up by CMO.
3. It is understood that some details of arrangement and equipment will require revision during precommissioning; it is, however, desired to deal with these ships as a class with respect to medical features. Accordingly, it is requested that recommendations by the medical officer for alterations and additions be considered in the light of class shipalts or class allowance list revisions, and that such recommendations be limited to those features which have a bearing on the military efficiency of the ship. Those alterations which are merely desirable, in view of the time requirement for these ships, will not be approved.
4. These ships were built as U. S. Maritime Commission hulls, at Sun Shipbuilding Co., Chester, Pa., and taken over by the Navy when nearly complete, for conversion to hospital ships. The ships will have, at completion, only the basic original features, and are full conversions.



Many new features have been included in the design, at the request of BuMed, and among these may be mentioned the size and speed, the full air conditioning throughout the hospital and crew's spaces (the first installation of this kind in any naval ship), and the location of clinical facilities low in the ship with surgical operating facilities near the metacenter. Other features recommended by BuMed as requisites are not present in these ships for a variety of reasons; thus, no cargo ports for embarking and debarking patients and medical stores are included. (The design agency is of the opinion that these functions will be served adequately by four (4) wide accommodation ladders, and by hoists for litters and stores). Access between watertight compartments fore and aft leaves something to be desired; and in particular, lack of access from the galley and mess hall, 2nd Deck to the elevator compartment forward will certainly decrease the efficiency of food service. The design agency, however, determined that the bulkhead could not be pierced, for security reasons. The above instances will serve to show the compromises necessary between the ideal hospital ship envisaged by this Bureau and the realities of ship design; operation of these ships will demonstrate what is necessary, if anything, in the correction of these and other possible defects.

4. These ships are Maritime Commission C4-S-B2 hulls, of approximately 15,000 displacement tons, 520 feet overall in length, 71 feet 6 inches in beam, with a draft of 23 feet 6 inches and a speed of 17.5 knots. Cruising radius is 12,000 miles.

Total berths on board are as follows:

|          |   |    |
|----------|---|----|
| Officers | - | 58 |
| Nurses   | - | 32 |

|                   |   |      |
|-------------------|---|------|
| CPO's             | - | 24   |
| Crew              | - | 230  |
| Hospital Corpsmen |   | 238  |
| Patients:         |   |      |
| Officers          | - | 60   |
| Enlisted          | - | 742  |
| TOTAL             |   | 802  |
| Grand Total       |   | 1384 |

The medical storerooms, figured to an 8' height, provide 85,000 cu. ft. of bin and batten storage.

5. The Bureau is interested in service reports, following a reasonable period of operations, on the following features in these ships:

(a) Air-Conditioning.

The status of ventilation in naval ships has reached a point where the maximum efficiency of fan ventilation has been attained, without providing conditions of comfort, in cases where ambient temperatures and humidity are high. The remedy is obviously to cool the air mechanically, but considerations of added weight, space and fuel requirements, operate to prevent the installation of air cooling equipment in naval vessels. These ships, as the first wide application of mechanical air cooling in naval ships, should add considerably to experience in the field. In this connection, the health and morale of personnel under this mechanical cooling system, the efficiency of the system in providing designed conditions, and economy of operation will be factors in determining the need for these installations. In combat ships, it is obvious that the military efficiency of personnel is of permanent importance, and the Bureau considers that future design of combat ships will use air-cooling to a wider extent.



(b) Patient Handling.

As discussed above, embarkation and debarkation of patients, and loading and unloading of medical stores will be done by the use of four (4) accommodation ladders, 40" wide, from the main deck, and by means of booms and hoists. Litters may be taken aboard by single, double, or multiple litter hoists from small craft by hoisting gear at five (5) stations on the port side and a similar number on the starboard side. Provision is being made for a double type Welin davit on each side forward, so that power boats may be unloaded at the rail or on deck, and LCVP type ambulance boats may be provided later, but are not now available. This Bureau had recommended that each ship be provided with six (6) LCVP, with suitable hoisting davits, for use at assault areas as ambulance boats.

As planned, embarked patients would be sorted in the after lobby on the main deck by the embarkation detail, and transported to wards by means of both elevators, or by the extra-width, low gradient ladders provided for this purpose. The forward main deck lobby is also available for sorting, and both these areas may be used as debarkation staging points for patients or baggage. As the result of operating experience, cargo ports on the second deck may be justified and further recommendation on this point will be deferred by the Bureau until the efficiency, or lack thereof, of the present layout is demonstrated.

No ambulance boats, as such, have been provided, and in recent assault operations, patients have arrived in assault landing craft, including LCVP, DUKW, LCI, LST, LCM, and other craft. With the provision of four (4) power boats in Welin davits, the use of these boats for ambulance purposes may be evaluated.



No litter hoists have been furnished, and the Milles-Harris sling, the salmon board, or modifications thereof, are suggested for fabrication in the ship for this purpose. Some study will be required to perfect the operation of embarkation and debarkation of patients by both deck and medical personnel, and reference is made to organization of REFUGE which has been furnished.

(c) Food Service

The food service to patients has received careful study, and has been adapted from successful hospital commissaries within the structural limitations of the ship. As noted above, no access is provided between the galley and elevators in the next compartment forward; consequently, all food for bed patients will come up from the galley to the after lobby, main deck, by the food elevator, and will be distributed to ward diet pantries, to be served out on individual trays from the pantries. To provide hot food in the diet pantries, vacuum food containers for solid and liquid foods are provided, with hand trucks for transporting them, and the ward diet pantries are equipped with electric "steam" tables and heated cabinets for compartmented food trays.

Special diets will be prepared in the Special Diet Kitchen, and ambulatory patients will be served in the mess hall. Special diets for ward patients will be brought by food elevator to the main deck lobby, in inserts which will be placed in an electrically heated food conveyor, similar to that in use in SOLACE. This conveyor is especially designed, and will serve approximately 65 diets.



Dishwashing will be done by hand in the ward diet pantries, then the dishes will be taken, between meals, to the main scullery for sterilization, and returned before the next meal. In the D&S-GU ward and in the Isolation Ward, the diet pantries are equipped with "Diaposall" garbage grinding units and with a boiling type sterilizer so that the dishes from these wards will not require sterilization in the main scullery.

A "sharp freeze" compartment of 1000 cu. ft. has been included in the refrigerator compartment, for quick frozen foods. Two milk emulsifiers ("Mechanical Cow") each of 40 gallon/hour capacity, have been installed, to provide the best milk possible. Ice cream capacity and storage has been increased to a point which is considered adequate for frequent serving to patients and crew, and for ship's service purposes. No soda fountain is installed, although strongly recommended by this Bureau, but ice cream and carbonated cola will be available in the Ship's Service Store.

(d) Deck and Bulkhead finishes.

This Bureau's recommendation for deck coverings was followed. Magnesite ("Selbalith") is used generally, and Terrazzo is used in surgical and other spaces. Magnesite requires special attention; and the manufacturer's recommendations, which have been furnished, should be followed. The color scheme of decks, bulkheads, overhead and trim, was carefully selected to give a cheerful hospital atmosphere and to require low maintenance work. The detail of fixed furniture has been designed to match that of shore hospitals.

(e) Surgical Suite

The location of these facilities near the roll and pitch center is possible in these ships, and should prove extremely desirable. A



Central Surgical Supply room has been included for serving surgical trays, sets and dressings to the operating rooms and to the whole ship, making possible central control of processing and inventory of these items.

The operating rooms and anesthesia room are fully provided with protection against the explosion of anesthetic gases; these precautions include the use of sparkproof electrical outlets, vaporproof operating lights, and electrically conductive deck. The suite is air conditioned, with humidity and temperature control; safe ranges are 55% - 65% relative humidity and 72° - 84° F. In addition to the above, the following anesthetic explosion precautions are required by operating room personnel:

- (1) Use of conductive shoes.
- (2) Intercoupling of patient, surgeon, anesthetist, anesthesia apparatus, and operating table.
- (3) Prohibition of the use of silk, rayon, and wool in the operating room.
- (4) Maintenance of temperature and humidity within prescribed ranges.
- (5) Prohibition of equipment which may explode an explosive gas mixture (non-sparkproof electrical equipment, actual cautery, etc.).

The orthopedic-surgical table (Stock No. S3-1352) was especially developed to provide for the full range of orthopedic procedures, and to serve as a general operating table as well.

Suction is provided in the operating suite by a central suction pump, with a McKesson system, including collection bottles and fixtures at the outlets in individual operating rooms. The x-ray film viewing boxes are recessed and spark-proofed.



In the Central Surgical Supply Room, an attempt has been made to permit the centralized control of processing of surgical equipment, and centralized inventory control. The Nurse Corps officer in charge and enlisted technicians will be trained in this work, and full equipment is provided for cleaning, processing and sterilizing surgical equipment for the operating rooms and wards all over the ship. A solution preparation assembly has been installed which may be used for whole blood processing as well. A 10 gal./hr. still is included, with a constant reading potentiometer in the line to indicate the quality of the distillate delivered. The large (24"x36"x60") rectangular steam sterilizer is intended for bulk supply sterilization, while the smaller (24"x24"x36") steam sterilizer is for solution or small pack work. Both of these items were especially designed for this use, the rectangular shape (larger usable volume than the previous cylinder) and the carriage design being completely new features.

(f) Administrative Suite.

The location of these offices, as well as the clinical facilities, below deck, is a new departure, which allows the upper decks to be used for wards. In these ships, it was possible to include office space for all heads of department, with good space for property, records, etc. The Medical Officer-of-the-Day has been provided with two offices, one of which (Main Deck Lobby) is intended as an admitting office for use at anchor or when docked, and the other (2nd Deck) for use underway, as a control station for the medical department. Equipment has been provided for voice recording and transcription of medical records with 8 recorders, and 2 transcribing amplifiers, which are intended to reduce long-hand record and correspondence writing by medical officers.



A public address system circuit with amplifiers only in medical department spaces, with microphone in the M.O.C.D. offices, is installed in the ship's loudspeaker system. Messages of no interest to the medical department will not be constantly blaring out in the medical spaces.

(g) Medical Stores

To allow the ship to fulfill its function as a medical supply ship at advanced areas, abundant medical storage is included, totaling 85,000 cu. ft. of usable space. The storerooms are designed for bulk and bin storage, and the main storeroom, Fr. 82-114, Hold Deck, is fitted as an Issue Room and is served by the elevator at Fr. 82. A complete Field Hospital of 100 beds is stored in cases as a unit.

A stock inventory control system is provided, similar to that in use in naval hospitals.

(h) Neuropsychiatric Dept.

Particular attention has been paid to detail in these wards (Main Deck, Fr. 55-78). All berths are fixed pipe, and all loose fittings have been removed or guarded. Doors are locked and keyed alike. Outlets have been installed for electric razors in heads. A sound-proof Strong Room suite is included. No hydro-therapy tub is included, the intentions being to secure sedation when necessary by means of packs and chemotherapy. The objective in design has been to provide security custody, and to prevent damage to themselves or others by these patients. Additional capacity for NP patients is provided by locks on doors of Ambulatory Wards (Second Deck, Fr. 56-82) for handling non-disturbed patients in this category.



(i) Recreation Facilities

The Main Deck Lobbies, fore and aft, are to be fitted with chairs and tables as lounges. The wide, open Bridge Deck will be available for movies, shows, deck sports and sun bathing.

For ward patients, each bed and berth will have a five-channel entertainment broadcast system, with ear phones and pillow phones. A master broadcast set will provide long and short wave commercial radio broadcasts, two record turntables, and microphone for ship's programs. Records will be provided in a commissioning allowance, and "V-disc" and Armed Services Radio broadcast discs automatically on requisition.

A patients' library, with automatic replenishment of books monthly, is provided on the Main Deck off the Lobby.

Two female Red Cross workers are assigned for morale work with patients, and Red Cross stores are furnished for this work.

(j) Laundry

Unusually large capacity has been designed in the laundry and its equipment. Hospital laundry will be received and issued in adjoining rooms, and the Linen Room. (Fr 188 $\frac{1}{2}$  - 194, port) will be used for all hospital linen storage and repair. A steam and formaldehyde disinfector is installed on the upper deck.

(k) Autopsy Room.

This space has been reduced in scope in accordance with current burial practice, and is intended to provide facilities for post-mortem examination, and /or the refrigeration of two bodies in unusual circumstances.

(l) X-Ray Department

In this section, unusual space is available, and adequate pro-



vision is made for Record and Appointment Office, Examination Room, and X-Ray storage for portable and mobile units. The X-ray machines are of latest approved shock-proof types, allowing for full radiographic, fluoroscopic and urological procedures. All rooms are lead-lined where necessary. The dark room is equipped with a SOLACE type processing tank, with air-cooled condensers for cooling water. Operating data on this item are especially desired.

(m) E. E. N. T. Department

This suite is a replica of successful shore installations, and the E. E. N. T. Operating Room is equipped to serve as an auxiliary general Surgical Operating Room when necessary.

(n) Dental Department

The Dental Clinic and Prosthetic Laboratory are designed in accordance with approved standards, and the Prosthetic Laboratory is fully equipped for all dental prosthetic work.

(o) Optical Repair Unit

This feature has recently been added to hospital ships to provide and repair spectacles. A Base Optical Repair Unit, with accessories, is provided, together with officer and enlisted personnel.

(p) Quarters

Officers and Nurses have been provided with unusually good accommodations in these ships. The Nurses' country is self-contained, with separate mess.

Hospital Corpsmen are berthed in excellent spaces, on the Main Deck (57 berths, suitable for night detail, or for WAVES, if assignment of WAVES is ever required) and on the Second Deck (181 men). These spaces have adjoining toilets and are fully air conditioned.



MEDICAL STORES

To coordinate the assembly and delivery of medical commissioning outfits, and to provide liaison between the Building Yards and BuMed, the Bureau has assigned Lt. Comdr. C. A. Setterstrom (HC) USN, to the Field Production Office, Building 3, Tenth Floor, Navy Yard, N. Y. Schedules for the assembly, delivery, loading, and storage aboard ship of all BuMed materiel will be worked out by this office. All inquiries, requests, and comment relative to materiel furnished by BuMed should be directed through this office.

The fact that all ships are identical in all respects will be reflected in medical commissioning outfits, and requisitions for BuMed materiel in excess of commissioning outfit will be approved only when applicable to the class.

A sincere attempt has been made by the Bureau to provide in these ships the best which is possible in hospital ship design and equipment; and to have the ships equipped, outfitted, and staffed to the highest degree possible prior to commissioning. It is emphasized that BuMed desires to cooperate with the Commanding Officer and Medical Officer in all respects, to the end of making these the finest hospital ships under any flag.